

CLAIMS

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- 602 A21
1. A method of accessing a logical volume stored on at least one of a plurality of storage elements, the method comprising steps of:
- 10 specifying an ELVID for the logical volume;  
specifying a physical storage address for the logical volume; and  
verifying that the ELVID corresponds to the physical storage address.
2. The method of claim 1, further comprising a step of maintaining an ELVID database that includes ELVIDs and a corresponding physical storage location.
- 15 3. The method of claim 1, wherein the step of specifying an ELVID and the step of specifying a physical storage address are performed by a host computer accessing the logical volume.
- 20 4. The method of claim 3, wherein the step of verifying is performed by one of the storage elements.
- 25 5. The method of claim 4, further comprising a step of maintaining an ELVID database at each storage element, the respective ELVID database including ELVIDs stored at the respective storage element and a corresponding physical storage location.
6. The method of claim 1, wherein the step of verifying is performed by a storage management controller.
7. The method of claim 1, wherein the step of verifying is performed by one of the storage elements.
- 30 8. The method of claim 1, wherein the logical volume is a conventional logical volume.
- 35 9. The method of claim 1, wherein the logical volume is a component of a conventional logical volume.

10. The method of claim 1, wherein the logical volume is a hyper-volume.

11. The method of claim 1, wherein the logical volume is a striped volume.

12. The method of claim 1, wherein the logical volume is a partition.

13. The method of claim 1, further comprising a step of assuring that the entity accessing the logical volume is authorized to do so.

14. The method of claim 13, further comprising a step of maintaining an ELVID database at each storage element, the respective ELVID database including ELVIDs and entities permitted to access the logical volume corresponding to the respective ELVID.

15. A method of accessing a logical volume stored on at least one of a plurality of storage elements, the method comprising steps of:

specifying an ELVID for the logical volume;

specifying a physical storage address for the logical volume; and

using the ELVID to assure that an entity requesting access to the logical volume is authorized to do so.

16. The method of claim 15, wherein the step of specifying an ELVID and the step of specifying a physical storage address are performed by a host computer accessing the logical volume.

17. The method of claim 16, wherein the step of using is performed by one of the storage elements.

18. The method of claim 16, wherein the step of using comprises a step of accessing an ELVID database.

19. The method of claim 15, wherein the step of using is performed by a storage management controller.

5 20. The method of claim 15, wherein the step of using is performed by one of the storage elements.

10 21. The method of claim 20, further comprising a step of maintaining an ELVID database at each storage element, the respective ELVID database including ELVIDs and entities permitted to access the logical volume corresponding to the respective ELVID.

15 22. The method of claim 15, wherein the step of using comprises a step of accessing an ELVID database, the ELVID database including ELVIDs and entities permitted to access the logical volume corresponding to the respective ELVID.

23. The method of claim 15, wherein the entities are user accounts.

24. The method of claim 15, wherein the entities are host computers.

25 25. The method of claim 15, wherein the entities are applications running on host computers.

26. A host computer, comprising:  
a processing unit; and  
an ELVID interface module to transmit access requests for logical volumes, the access requests including an ELVID for the logical volume and a respective physical storage location.

30 27. A storage device comprising:  
a storage medium to store data corresponding to logical volumes; and  
an ELVID verifier module to verify that an access request to a physical storage location on the storage medium is directed to the correct logical volume as identified by an ELVID.

5 28. The storage device of claim 29, further comprising an ELVID database including ELVIDs for logical volumes stored on the storage device and a corresponding physical storage location.

10 29. A storage device comprising:  
a storage medium to store data corresponding to logical volumes; and  
an ELVID authorization module to verify that an access request to a physical storage location on the storage medium is received from an entity permitted to access the logical volume with a corresponding ELVID.

15 30. The storage device of claim 29, further comprising a storage medium to hold an ELVID database, the ELVID database including ELVIDs and entities permitted to access the logical volume corresponding to the respective ELVID.

20 31. A computer system comprising:  
at least one host computer;  
a plurality of storage elements; and  
means for associating ELVIDs with requests for access to logical volumes; and  
means for verifying that access requests to physical storage locations are made to the appropriate logical volume identified by a respective ELVID.

25 32. A computer system comprising:  
at least one host computer;  
a plurality of storage elements; and  
means for verifying that access requests to logical volumes having an associated  
30 ELVID are made by an entity authorized to access the logical volume.